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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/516,274	02/29/2000	Victor Michael Aquaro	1-1-36-86	9602

7590 11/19/2002

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EXAMINER

NGUYEN, TUAN N

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 11/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/516,274

Applicant(s)

AQUARO ET AL.

Examiner

Tuan N Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02/29/2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Paul IP

PAUL IP

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Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 03 October 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Drawings

1. Acknowledge the formal drawings were received on October 1, 2002.

Response to Amendment

2. In respond to applicant's response to restriction requirement filed October 3, 2002, Applicant elects Group I, claims 1-15. Applicant's election with transverse of claim 16 is acknowledged. The traversal is on the ground(s) that restriction is improper since each group is generally related to multimode tapered structures for coupling multimode laser to a multimode fiber.
3. Claim 16 is re-admitted and pending in the application, because the claims related to multimode tapered structure.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or non-obviousness.
5. Claims 1-6, 8-13, 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable Head et al. (US 5436990), in view of Scifres et al. (US 4820010).

With respect to claims 1, 8, 15, and 16 Head et al. ('990) shows in figure 1 and discloses coupling a multiple emitter laser diode to a multimode optical fiber use micro lens that has elliptical shape (col 2: 54-55) to collimate output of laser diode and butt the output to the optical fiber. He further shows (fig 1: 12, 14, 16) the laser source having rectangular aperture and multimode fiber having a core and cladding. However, Head et al. did not disclose the coupling micro lens as multimode tapered structure having elliptical cross section coupling to multimode laser and output end having a circular cross section for coupling with the fiber. However, Scifres et al. shows in figures 2, 4 and discloses an optical system having tapered structure receive multiple laser diode, where its input end having elliptical cross section coupling with the lasers, and the output end having circular cross section coupling to the fiber (F2: 11, 49, 53; F4: 23, 33). It would have been obvious to one of ordinary skill in the art to provide Head et al. ('990) with the multimode tapered structure as taught or suggested by Scifres et al. ('010), for the benefit of coupling the light between the laser diode and the fiber bundle. Since claims 1, 8, 15, and 16 recites the same or identical elements/limitations it is inherent to use patents ('990) and ('010) to recite the method of coupling multimode laser to a multimode optical fiber and method for fabricating a multimode tapered for coupling multimode laser to a multimode optical fiber, product by process.

With respect to claims 2-4, and 9-11, Head et al shows in figures 2, and 4 the elliptical cross section approximately matches the rectangular aperture of said laser (F1: 49), and circular cross section approximately matches the core of the fiber (F4: 31), where tapered structure is smaller in dimension at input end to a larger dimension at output end (F2: 49, 53). It has been held that a change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

With respect to claims 5-6, and 12-13 Scifres et al. ('010) shows in figures 2 and 8, the tapered structure has a numerical aperture and length provide desired coupling efficiency (col 5: 54-56). Discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

6. Claims 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable Head et al. (US 5436990), in view of Scifres et al. (US 4820010) and Rope et al. (US 6252715). Head et al. and Scifres et al. disclose the above except tapered structure accept a highly elliptical beam shape and convert the beam for acceptance by circular optical fiber. Rope et al. ('715) discloses of beam pattern and focus element where converting elliptical beams to circular beam for output. It would have been obvious to one of ordinary skill in the art to incorporate Head et al. ('990) and Scifres et al. collimating lens as suggested by Rope et al. ('715), for the benefit focusing the elliptical beam into circular shape for stronger focus.

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Citation of Pertinent References

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. It is cited primarily to show the product of the instant invention.

Head et al. (US005579422A), Scifres et al. (US 33722), Flint (US 5734766), Kondoh et al. (US 5058978), Garmon (US 4946239), and Tangonan et al. (US 4711514) disclose a tapered structure for coupling multimode laser to multimode fiber.

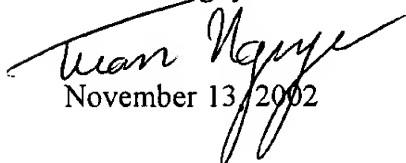
Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan N Nguyen whose telephone number is (703) 605-0756. The examiner can normally be reached on M-F: 7:30 - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-8592 for regular communications and (703) 746-8592 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Tuan N. Nguyen


November 13, 2002



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